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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/517,328

12/09/2004

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38347-204667

7405

23643 7590 09/11/2008
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EXAMINER

KRISHNAN, GANAPATHY

ART UNIT

PAPER NUMBER

1623

MAIL DATE

DELIVERY MODE

09/11/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/517,328	Applicant(s) SMITH ET AL.	
	Examiner Ganapathy Krishnan	Art Unit 1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-16, 21-28, 32 and 51-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-16, 21-28, 32 and 51-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The amendment filed 3/13/2008 has been received, entered and carefully considered.

The following information provided in the amendment affects the instant application:

1. Claims 1-12, 17-20, 29-31 and 33-50 have been canceled.
2. Claims 21, 25 and 32 have been amended.
3. Claims 13-16 have been withdrawn.
4. Remarks drawn to rejoinder of claims 13-16 and rejections under 35 USC 103.

Applicants have requested rejoinder of withdrawn claims 13-16 arguing that these claims remain with the pending claims that are drawn to a method treating cancer. Applicants submit that there is a technical relationship between claims 13-16 and the currently pending claims that involves the same or corresponding special feature, namely, the recognition that a compound having the ability to inhibit Rsk activity can be used as an effective anti-neoplastic agent in certain cancers. After perusal of the withdrawn claims and applicants' remarks, the Examiner has decided to rejoin withdrawn claims 13-16 with pending claims 21-28, 32 and 51-53.

Claims 13-16, 21-28, 32 and 51-53 are currently pending and are under consideration in the case.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 13-16, 21-28, 32 and 51-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matthes et al (Phytochemistry, 1980, 19, 2643-2650) of record, in view of Ganesan (WO 99/34015) newly cited, Marks et al (US 5,910,583) of record, Kuijpers et al (US 5,733,523) of record and Hung et al (US 2003/0125265) of record.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Matthes et al disclose a compound of structural formula 7 (a flavone), wherein two of the three hydroxyl groups on the sugar moiety are acetylated (page 2645). This compound is structurally same as the compound claimed in instant claims 13, 21 and 52. Matthes teaches that the extract from the roots of *Zingiber zerumbet* (which contains compound 7 as an active agent) was tested against a rat neoplastic liver cell strain and found to be cytotoxic (page 2643, left

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column, Introduction, second and third paragraph). Even though Matthes teaches a compound that shows cytotoxicity towards neoplastic cells (cancer) and a composition comprising the same, he does not specifically teach that his compound is an Rsk inhibitor. But one of ordinary skill in the art will recognize that the compound having structural formula 7 taught by Matthes has anticancer properties.

Ganesan teaches that mutations in p90 ribosomal S6 kinase-3 (Rsk3) may represent one of the earliest genetic events in the development of ovarian cancer (page 5, lines 4-7) and a method of treating cancer comprising administering to a patient an effective amount of a compound that inhibits Rsk3 function (page 103, lines 19-25). Suitable compounds for use include antibodies or fragments or variants thereof that inhibit Rsk3 activity (Page 58, lines 17-24). Active Rsk3 molecules could be peptides, drugs or organic compounds and may be used for inhibition of Rsk3 (page 63, lines 22-24). Ganesan also teaches pharmaceutical composition comprising a vector or a functional variant and a pharmaceutically acceptable carrier (page 63, line 26 through page 64 line 8). Suitable carriers are well known in the art (page 64, lines 13-15). From this teaching of Ganesan one of ordinary skill in the art will recognize that Rsk3 is associated with cancer and that a composition comprising drug or peptide or organic compound that inhibits Rsk3 would be of value. Ganesan, however does not teach a composition comprising an Rsk specific inhibitor and an antitumor agent as instantly claimed. Thus according to Ganesan above, cancer is linked to Rsk3.

Ganesan teaches that there is a link between Rsk-3 and cancer and that an inhibitor of Rsk-3 could be peptides, drugs or organic compounds. Matthes teaches an organic compound (a

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flavone as instantly claimed) shows anticancer properties with rat neoplastic cells. This means that the compound of Matthes can be used for treating cancer via inhibition of Rsk-3.

Marks teaches in general a variety of uses for oligonucleotide formulations including treatment of tumors (col. 5, lines 9-25).

Kuijpers et al teach in general the use of antisense oligonucleotides and their pharmaceutical formulations for the treatment of tumors (see abstract, col. 1, lines 26-40).

Huang, drawn to treatment of cancer, teaches several classes of compounds used for the same including chemotherapeutics like daunorubicin, mitomycin, bleomycin, cisplatin, taxol, melphalan, radiotherapy using radioisotopes, antibodies and cytokines (page 6 through page 20) and their compositions (page 24, paragraph 0263).

Based on the teachings of the prior art above one of ordinary skill in the art will recognize that:

1. Nucleic acid constructs can be used to inhibit Rsk activity and antisense-oligonucleotides have been used for treatment of cancer. Hence antisense-oligonucleotides and interfering oligonucleotides can be used for treating cancer by inhibiting Rsk activity.

2. Flavonoid glycoside of Matthes and all the other active agents as taught by Huang exhibit antineoplastic activity and like oligonucleotides can be used for inhibiting Rsk activity in view of Ganesan.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make compositions comprising an Rsk specific inhibitor and an antitumor agent as instantly claimed since the prior art teaches that Rsk activity is associated with cancer and that flavones of the type instantly claimed have anticancer properties.

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One of ordinary skill in the art would have been motivated to use the compounds and compositions instantly claimed for the inhibition of Rsk-3 and treatment of cancer since the active agents as instantly claimed are known to be useful for treatment of cancer and the prior art establishes a link between Rsk-3 and cancer. One of skill in the art would be inclined to use the compounds of the type taught by Matthes in the instant method since they have been art tested and shown to have anticancer properties. Combination of the two or more known active agents would have been reasonably expected to provide additive effect against cancer. Further, it is a well-known in the art to employ a combination of agents for treating cancer.

Furthermore, it has been held that it is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose in order to form a third composition that is to be used for the very same purpose. The idea of combining them flows logically from their having been taught individually in the prior art. See *In re Kerkhoven*, 205 USPQ 1069, CCPA 1980.

Response to Applicants remarks

Applicants have argued that based on the overall teaching of the prior art cited in the previous action applicants' selected compounds make a poor choice for an antineoplastic agent. The secondary references Bjoerbeck, Kuijpers and Marks do not teach or suggest using their respective agents for targeting Rsk. Applicants' arguments are not found to be persuasive. The new art rejection as above is made of record. Ganesan teaches a link between Rsk-3 and cancer. Marks, Kuijpers and Huang all teach the use of active agents as instantly claimed for the treatment of cancers and tumors and the primary reference, Matthes, teaches that compounds as

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instantly claimed, i.e., flavones, have anticancer properties. The obviousness is as established above.

Conclusion

Claims 13-16, 21-28, 32 and 51-53 are rejected

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ganapathy Krishnan whose telephone number is 571-272-0654. The examiner can normally be reached on 8.30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GK

/Shaojia Anna Jiang, Ph.D./

Supervisory Patent Examiner, Art Unit 1623